

FUEL CELL ANODE GAS OXIDIZING APPARATUS AND PROCESS

ABSTRACT OF THE DISCLOSURE

Heat is extracted from an oxidizable component in an anode gas generated by a fuel cell. A heat exchanger is in fluid communication with the fuel cell, and the anode gas flows through a first portion of the heat exchanger. The heat exchanger is further in fluid communication with a source of an oxygen-containing gas, such as air, and has a second portion through which the air flows, so that the temperatures of the anode gas and the oxygen-containing gas tend to equalize in the heat exchanger. A downstream end of the heat exchanger is in fluid communication with a space where the anode gas and the air mix and form a mixture of anode gas and air. A first burner located upstream of the heat exchanger heats the air. A catalytic oxidizer is in fluid communication with the space and oxidizes the mixture. The catalytic oxidizer emits a heated effluent that is directed back to the fuel cell. A second burner heats the effluent during at least portions of the time during the operation. An anode gas buffer evens out short-duration spikes in the concentration of oxidizable components.

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